

**A BEVERAGE PACKAGING UNIT**

The present invention relates to a beverage packaging unit.

- 5 In present days society people drink a large number of different sorts of beverage, for instance aerated or carbonated beverages, juices, milk, milk-based beverages, and also packaged beer, ale and wine, for instance portion-wise packaging units.

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The most common packaging units for present day beverages are bottles of varying sizes each with its characteristic appearance, i.e. a cylindrical package which narrows at its top to form an orifice from which the beverage can be drunk, where-  
15 with the orifice can be re-sealed with the aid of a screw-threaded cork or screw cap. The bottles are normally made of plastic, such as PET or glass.

Another type of common packaging unit is an aluminium can of  
20 cylindrical shape, so as to enable such cans to be mutually stacked, and comprising a characteristic can opening procedure in which part of the aluminium tab is broken away from the upper side of the can and therewith create a hole from which the contents of the can be drunk.

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Another common type of packaging unit is the Tetra Pak with which a plastic wrapped drinking straw is glued to one of the two largest side surfaces of the Tetra Pak unit. The contents of this packaging unit are typically drunk by removing the straw from the unit and then removing the plastic wrapping and inserting the straw down through a hole provided in the upper side of the Tetra Pak packaging unit and covered with aluminium foil. The contents of the Tetra Pak unit can then

be drunk through the straw.

Another common beverage packaging unit is a glass bottle that includes a cap fitted over the neck orifice of the bottle and a hole from which the bottle contents can be drunk.

All types of packaging units have certain positive and negative aspects. Generally speaking, some packaging units are not transport effective because they cannot be packed tightly together, while others cannot be re-sealed, and because some other packaging units are unhygienic. The drawbacks are described in more detail hereinafter.

One problem with respect to some packaging units is that they  
15 are transported over long distances, most often in large  
freight vehicles. The shape of cylindrical beverage packaging  
units prevents optimal use of the freight volume of the vehicle.  
The typical PET bottles are usually placed in crates  
which are then stacked firmly one upon the other. This means  
20 that large volumes around the bottles and above and beneath  
respective bottles goes unused. This problem thus also exists  
with all cylindrical packaging units that have a tapering  
upper part where either a screw cork or a screw cap is af-  
fixed. Another packaging unit that constitutes a part of this  
25 problem is the typical aluminium can. This can is also cylin-  
drical and therewith results in unused freight volume around  
the cans.

Another problem with many beverage packaging units is that  
30 they can not be re-sealed. When such a packaging unit has  
been opened on a given occasion, in order to drink its con-  
tents, it is normally either necessary for the person con-  
cerned to empty the unit of its contents at one and the same

time or to throw away beverage that he/she does not wish to drink subsequent to having opened the unit.

The person drinking from the packaging unit will normally  
5 wish to drink a small amount, often at different times, and  
be able to re-seal the unit so that its content can be drunk  
later on. One solution to this problem exists in the bottle  
that is sealed with a screw-on cork, for instance the PET-  
10 bottle, although these bottles have less effective freight-  
volume properties, as mentioned above. Other typical beverage  
packaging units, such as aluminium cans, glass bottles pro-  
vided with caps or Tetra Pak packaging units cannot be re-  
sealed.

15 The unhygienic packaging unit present a further problem.  
Aluminium cans are exposed to the surroundings from the manu-  
facture and then during transportation, e.g., to the grocery  
store and then in the store itself and subsequently until the  
liquid in respective cans has been drunk. In order to drink  
20 from the can, the can is opened and the part of the can that  
is folded away to provide an opening through which the con-  
tent of the can be drunk is folded down into the can, i.e.  
down into the liquid that is later to be drunk. Some packag-  
ing units, among them aluminium cans, are designed so that  
25 the person drinking from the unit is forced to place his/her  
mouth directly against a part of the packaging unit which, as  
earlier mentioned, has been exposed to the surroundings from  
the manufacture of the can until the person concerned drinks  
from the unit. Moreover, the liquid is drunk from the can,  
30 into which the can part that has been folded away to provide  
said opening has been immersed. The person who drinks the  
liquid in the can is therewith exposed for instance to bacte-  
ria, virus, and/or toxic substances as a result of the direct

contact of the person's mouth with both the can and the liquid, which is unhygienic.

One further drawback and problem encountered with the Tetra Pak packaging unit that includes a drinking straw is that the Tetra Pak unit is deformable, meaning that when the unit has been opened with the aid of the straw and while gripping the Tetra Pak unit with unaccustomed fingers, the unit is squeezed together to such an extent that liquid will gush from the Tetra Pak unit like a fountain and therewith land outside the unit.

All of the aforesaid problems associated with known beverage packaging technology are solved by means of the present invention, which provides a stackable and re-sealable and hygienic beverage packaging unit.

Accordingly there is provided in accordance with the invention a beverage packaging unit that includes an opening from which the liquid contents of the unit can be drunk or poured, wherewith said opening, or orifice, can be closed with the aid of an closure element, wherein the invention is characterized in that the packaging unit is parallelepipedic in shape and includes a hollow box-like body and said closure element; in that said parallelepipedic hollow box-like body has a bevelled corner at which there is formed a three-sided or triangular surface that connects with said box-like body; in that there projects out from said surface a tubular part that includes said opening or orifice; in that said closure element includes a generally pyramidal body which is shaped so that when in abutment with said bevelled corner of said box-like body it forms, together with said body, said parallelepipedic packaging unit; in that said closure element

includes a cavity for receiving said tubular part; and in that the packaging unit includes co-acting fasteners on said tubular part and also in said cavity for removably retaining said closure element at said tubular part, so that said box-like body and said closure element will form a parallelepiped.

The invention will now be described in more detail, partly with reference to an exemplifying embodiment of the invention  
10 illustrated in the accompanying drawings, in which

- Figure 1A illustrates a packaging unit according to the invention, in which the outwardly projecting tubular part is placed on the three-sided surface of the box-like body and  
15 constitutes the opening from which liquid beverage is able to run out, and shows the opening closure part of the packaging unit in abutment with the three-sided surface of the box-like body;
- 20 - Figure 1B illustrates the packaging unit according to the invention in which the outwardly projecting tubular part is shown placed on the three-sided surface of the box-like body, said surface constituting the opening from which beverage is able to run out, wherein the figure shows the closure part of  
25 the packaging unit released from the outwardly projecting tubular part of the box-like body;
- Figure 2A shows the packaging unit according to figure 1A-  
30 1B including a pipe or drinking straw inserted in the outwardly projecting tubular part and showing the closure element in abutment with the three-sided surface of the box-like body;

- Figure 2B illustrates the invention according to figures 1A-1B and shows a pipe or drinking straw in the outwardly projecting tubular part, wherewith the closure element is shown loosened from the outwardly projecting tubular part of the box-like body but still in contact with the pipe or straw.

- Figure 2C illustrates the inventive packaging unit according to figures 1A-1B and shows a pipe or drinking straw inserted in the outwardly projecting tubular part and also shows the opening closure element fully released from the outwardly projecting tubular part and from the pipe or straw inserted in said tubular part;

- Figure 2D is an enlarged view of the opening closure element shown in figure 2C, including the cavity, the straw and the outwardly projecting tubular party.

Figures 1A-1B of the present invention relate to a beverage packaging unit 1 that comprises a parallelepipedic hollow box-like body 2 and an opening closure element 3. An opening 8 is provided through which beverage contained in the body 2 can be drunk, said opening 8 being sealable with the aid of said closure element 3.

The packaging unit 1 is parallelepipedic in shape and comprises the hollow box-like body 2 and the opening closure element 3. One of the corners of the parallelepipedic hollow body 2 is bevelled to provide a three-sided, or triangular, surface 7. This three-sided surface 7 connects with the box-like body 2. An outwardly projecting tubular part 4, which includes said opening 8, is located on the three-sided surface 7.

The opening closure part 3 includes a generally pyramidal body that is configured so that when the opening closure element 3 is in abutment with the three-sided surface 7 at 5 the bevelled corner of the box-like body 2, said pyramidal body will form said parallelepipedic unit 1 together with the box-like body 2. The opening closure element 3 includes a cavity 6 which is intended to receive the tubular part 4. Mutually co-acting fasteners 10 for instance snap fasteners 10 or screw threads, are provided on both the tubular part 4 and in the cavity 6. These co-acting fasteners retain releasably 10 said opening closure element 3 on the tubular part 4, so that the box-like body 2 and the opening closure element 3 will form said parallelepipedic packaging unit 1.

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According to one embodiment of the invention there is included said tubular part 4 and said opening 8 through which beverage contained in the box-like body 2 will run out.

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Figures 2A-2D illustrate a further embodiment in which a pipe 5, such as a drinking straw, made of an appropriate plastic material, is firmly fixed, said straw preferably being an expandable or non-expandable straw that extends through the tubular part 4 down into the interior of the box-like body 2 25 with the bottom end 20 of the straw 5 in contact with the bottom 21 of the box-like body 2.

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The pipe 5 inserted down into said tubular part 4 is expandable along a part extending from said tubular part 4. The pipe 5 will preferably include an edge 16 which is positioned so as to come into abutment with the inside 17 of the body 2. This will prevent displacement of the pipe 5 from its position in the box-like body. The edge 16 is resiliently deform-

able to the extent that the edge 16 will be deformed when the pipe is pressed down through the tubular part 4. Subsequent to the pipe 5 and the edge 16 having been forced down into the box-like body 2, the edge 16 will return to its original 5 form and constitute an obstacle to withdrawal of the pipe 5 from the box-like body 2 or to movement of the pipe 5 away up from the bottom 21 of said body 2.

According to one embodiment, the pipe 5 lack the edge 16, 10 therewith enabling the pipe 5 to be withdrawn freely from the box-like body 2 and, likewise, freely inserted into said body.

In one embodiment of the invention with the tubular part 4 as said opening, the fastener 10 is a snap-in fastener. The snap-in fastener preferably comprises a shoulder or lip 13 located externally on the tubular part 4, and a shoulder-hooking recess 14 located inside the cavity 6 on the closure element 3. The fastener 10 is adapted so that the closure 15 element 3 can be rotated around the tubular part 4. The closure element 3 is removed from the tubular part 4 preferably by twisting said element 3 so that the corners of said element will be free from the three-sided surface 7. The closure element 3 is then drawn over orthogonally in the free-standing 20 corners and out from the three-sided surface 7 of the body 2. As the opening closure element 3 is drawn powerfully, preferably by one and the same person, the shoulder 13 and the shoulder hooking recess 14 are finally deformed elastically 25 and the closure element 3 is thus released from the box-like body 2. The unit can be re-sealed, since the shoulder 13 and the recess 14 remain intact after removal of the closure element 3, therewith enabling the unit to be re-closed by virtue of the shoulder 13 snapping into the recess 14.

In another embodiment of the invention, the fastener 10 is screw-threaded, wherewith the tubular part 4 comprises an external screw thread. The cavity 6 of the closure element 3 5 comprises internal threads. The closure element 3 is released from the box-like body 2, by turning the closure element 3 in a given direction so that the element 3 will loosen from the box-like body 2.

- 10 In a further embodiment the pipe 5 is placed in the tubular part 4 in which a snap-lock is provided; see figures 2A-2D. The snap-lock is comprised of an outer toothed ring 12, which preferably encircles the pipe 5, and a recess or notch 15 in the cavity 6 of the closure element 3, said recess also preferably encircling the cavity, wherein the toothed ring 12 and the recess 15 hook together due to the resilient deformation of the ring 12 and the recess 15. Because the ring 12 and the recess 15 remain intact, the packaging unit can be re-closed by virtue of the recess 15 snapping onto the toothed ring 12. 15  
20 The ring 12 and the recess 15 are used so that the pipe 5 is able to expand.

The tubular part is preferably expanded at a distance from the three-sided surface 7, so that the person concerned will 25 be able to encircle the tubular part 4 with his/her lips and therewith drink from the packaging unit 1. This avoids lip contact with surfaces of the box-like body 2 that have not been protected by the closure element 3.

- 30 The opening closure element 3 shall be capable of sealing abutment with the three-sided surface 7 of the tubular part 4 in the case of all embodiments, and then preferably with the outer end of the tubular part. This also protects the three-

sided surface 7 and the tubular part 4 from contamination.

Plastic bridges 18 are preferably fastened between the box-like body 2 and the closure element 3 that abuts said body 2, 5 irrespective of the embodiment concerned. When removing the closure element 3 from the box-like body 2 and therewith opening the packaging unit 1, these plastic bridges 18 are broken off, therewith indicating that the packaging unit has been opened.

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Although a number of embodiments have been described above, it will be understood that the outwardly projecting tubular part 4 of the box-like body 2, the pipe 5, the cavity 6 of the closure element 3 may be designed in some other appropriate manner without departing from the basic concept of the invention. 15

The present shall not therefore be considered to be limited to the described and illustrated exemplifying embodiments 20 thereof, since variations can be made within the scope of the accompanying claims.